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ORIGINAL ARTICLES.

AMBLYOPIATRICS.[1]

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THE fact that no name exists for the therapeutics of amblyopia in the cases in which the defect is ascribed to "disuse," and coëxisting either with squint, muscular insufficiency, or a high degree of ametropia and probably of anisometropia, leads to the astonishing fact that the desire or the attempt to cure amblyopia does not exist on the part of ophthalmologists. If a child with one weak and deformed leg is brought to the orthopedic surgeon, he does not say, "Oh, well, the child has one good leg, let it get on with that alone." If a finger or a hand is injured, does a surgeon ignore its needs and congratulate himself and the patient that the rest of the fingers or the other hand is all right? But it is a literal truth that an argamblyopic eye (*i. e.*, one amblyopic from disuse) brought to the oculist is dismissed without care and without attempt at cure. In no text-book with which I am acquainted are either principles or rules laid down to govern the treatment, and no hint is given that any treatment is desirable. Not only so, but positive instructions are laid down that, carried out, prevent the weakened eye from ever regaining its lost power. It is as if the surgeon should say of a lame leg: *Strap it up out of the way; it can't work with the other, or as well as the other; let it go.* Listen to this extract from the latest text-book on ophthalmology, fresh from the press:

IN ANISOMETROPIA WE GIVE THE SAME GLASSES FOR BOTH EYES, OR CORRECT ONLY ONE EYE AND PLACE A PLANE GLASS BEFORE THE OTHER.—*Fuchs, Text-book of Ophthalmology.*

I set this sentence out in capital letters, as displaying as much ophthalmologic error and therapeutic sin as could easily be gathered into so many words. Another popular treatise puts it this way: "For the class of patients whose ocular discrepancies [*anisometropia*] are so great that they always use only one eye, nothing is to be done save to aid as perfectly as possible the working member in case it needs assistance. The other is to be left to purely ornamental functions."

Any number of such quotations could be added were it necessary to show that the established conviction and practice of the ophthalmologic profession is not only to completely ignore the need and the duty of treatment of argamblyopia, but even to so further handicap eyes thus afflicted by measures of anti-therapeutics as to render recovery impossible, and even to increase the defect.

In square and absolute opposition to this I contend that every amblyopic eye is a sick eye, and that it is the physician's first duty to cure, whether it be eyes, or legs, or bodies.

Our impotent willingness to permit such a lazy method of non-treatment is a distinct reproach and discredit to us. It is simply untrue that patients with anisometropia will not permit a proper and helpful correction of each eye. In some 2500 cases occurring in private practice, I have found none such except two or three who had simple myopia in one eye and approximate emmetropia in the other. But, for obvious reasons, in such cases there is no amblyopia, and they are, therefore, out of the count. Of course, correction of anisometropia may be inconvenient and even uncomfortable to the patient for a short time, but could one expect the abnormal habits and weakened organs of a lifetime to resume normality in a few days? Do orthopedic surgeons thus treat the consequences of spinal curvature or talipes? Instead of the supine let-alone policy we should seek to save and to heal and to strengthen. Instead of non-response to treatment and inability of the patient to wear binocular correcting glasses, I have, in fact, been delighted and astonished to witness how soon response comes, and how short or non-existent is the period of discomfort. The weakened, almost blinded eye, soon reacts to the spur of kind, intelligent helpfulness, and, as month by month one watches these eyes improve and gather strength, one feels the pride and pleasure of the true physician in his true work. I have never failed to find such reaction even in the most hopeless cases of argamblyopia.

And first, a prefatory word as to the new coinages that, with some trembling, I have ventured to strike: The needed word *amblyopiatrics*, or the therapeutics of amblyopia, explains itself, but it seems surprising that scholarly ophthalmologists should have continued to use the tautologic barbarism, *amblyopia exanopsia*. According to its

[1] Read before the Philadelphia County Medical Society, December 28, 1892.

Greek roots amblyopia can mean nothing but *dimness or dulness of the eyes or of vision;* and *ex-anopsia* can mean only, *from absence of sight.* The combined term, therefore, is literally and absurdly enough this: *dimness of sight due to want of sight,* or, *lessened visual power from failure or absence of visual power.* There is no hint in the etymology of the supposed meaning, *amblyopia from disuse (of the eye).* It seems clear that we should drop such a term and make use of some one that will express what we mean and desire. In Greek we have ἔργον, meaning *function,* ἐνέργεια, *activity of function,* of which the opposites are, ἀργός and ἀργία. A well-formed and significant compound for *disuse-amblyopia,* would, therefore, be *argiamblyopia,* contracted naturally to *argamblyopia.*

I have no desire to enter into the vexed question as to whether the muscular anomaly or ametropia precedes and causes the amblyopia, or whether the reverse is the case. When the patient appears in the oculist's office, the two facts are (at least often) presented at the same time, and our task is at once the very practical one of therapeutics, the question of etiology being of minor or theoretic importatance.

There is, however, a very suggestive illumination thrown back upon the question of etiology by the practical results of intelligent and persistent therapeutics. When large numbers of amblyopic eyes recover their lost acuteness of vision by means that permit and necessitate their functionalization, the dogmatism of authorities and the negligence of oculists receive a suggestive comment amounting to refutation, both of the theory and of the sadly common resultant practice, that the amblyopia is cerebral or that it is the causal agent of the muscular or ametropic anomaly. Almost without exception, my cases teach me that amblyopia is argamblyopia. (It goes without saying, of course, that amblyopia due to fundus-lesions and media-lesions are out of the count.) And when such improvement of vision follows the removal of the ametropic or heterophoric hindrance it, *ipse facto,* justifies the acceptance of the theory of effect-amblyopia implicit in the word coined.

But whether the one theory or the other be the true one, the therapeutic sin of not attempting to bring back the lost power of these handicapped and half-ruined eyes, is a sin that cries out against us. The number of persons going about, and going on to the age of cataract-possibility, with such eyes, is surprisingly large. Whether with growing practice one sees more patients, or whether such argamblyopic patients, neglected by others, drift into one's hands, one is amazed at the frequency of the fact, and that instead of heroic effort to save, there has usually been pursued a no-policy of the most atrocious and let-alone indifference. Now this policy of *laisser-aller* is to me incomprehensible, unethical, antimedical, and impolitic, and the object of this writing is to protest against it and to offer proofs that it is in all these ways wrong. "Far from telling me how to save the bad eye, my doctor never suggested that it could or need be saved"—that gives the hint of the impolitic policy. "I now have cataract in my best eye, and the other has been no good for many years"—that should deeply sting the heart of the negligent physician—if he could hear it.

The practice may partially be a conscious or unconscious result of what I believe the false teaching that the amblyopia is cerebral or idiopathic, or is the cause of the coëxistent strabismus or insufficiency, or again of the still more execrable teaching to correct the ametropic defect of one anisometropic eye, leaving the other to go to the dogs.

The functionalization of argamblyopic eyes consists, of course, in three things: 1. The correction of the ametropia; 2. The reinstatement of the muscular balance, if imbalance exists; 3. Exercise.

As to the correction of the ametropia, there are a number of peculiar difficulties and problems. These each refractionist will overcome and answer according to his teaching, his habit, or his intelligence. Assuredly no hard-and-fast rule will suffice, nor can such a rule be even approximately formulated. Each case will be a study in itself, requiring the most accurate discrimination of judgment, and the finest delicacy of testing. In an eye of which the neurologic elements and the cerebral centers are certainly weakened and partially atrophied, the failure to hit exactly the right kind, degree, or precise proportion of help required, foredooms at once to failure. The very breath of life in such an eye is trembling between endeavor and renunciation. A shade of over-correction or of under-correction, a slightly misplaced axis of astigmatism, a misplaced or maladjusted spectacle, a touch at the wrong place, the lack of a wee-bit of help at the right place—*anything except the right thing*—smothers the little remaining power of recuperation, and proves a tiny load too great for the tiny forces to lift. We are here dealing with infinitesmals, and the keenest and swiftest perception will win where a less subtle discrimination will fail.

It is evident that such eyes must be nursed and encouraged, as it were, into convalescence. Frequent re-testings will be required; frequent adaptations to the changed conditions sure to follow; watchful care if one weak part of the complex system fails to respond or temporarily gives way; constant readjustment of the spectacles following and stimulating the renascent powers, and meeting them with the precise modicum of lessened or increased aid—these and many such methods of guiding and guarding,

must be kept in mind until full health is restored, and the convalescent eye enjoys and shares the labors of its fellow.

In the same way the reëstablishment of muscular coördination, still further complicating the problem, will be brought about according to the peculiarities both of the case and of the physician.

But these questions having been settled, gymnastics will remain as the very heart of the matter and crux of the difficulty. An eye the visual power of which has from disuse fallen to 20/C, let us say, and reduced to only the temporary holding of the image of Jaeger 14 or 18, will not participate in binocular vision, however perfect the image formed on the retina, or however balanced the muscles. It must be exercised, and gently forced to function. It is clear that the good eye must be temporarily thrown out of use, and the weakened brother put to work alone. The kind and the amount of exercise will again depend on the retained visual acuteness of the eye to read print, large or small, and the retained power to continue this for a longer or a shorter period of time. Here again appears the necessity on the part of the physician of careful estimation by a trained judgment to give the proper instructions.

But the final success will depend upon the patient's persistence, patience, and coöperation. This cooperation will only be certainly gained by making him (or, if a child, his parents) thoroughly understand just what is desired, and the full significance of it all. To him it should be explained in detail and fulness, that exercise only develops function; that as years go by, non-exercise will still further and hopelessly ruin the eye; and that as age approaches, the possibilities of danger to the good eye (always doubled if there be but one!) are greatly increased by the liability of cataract, of inflammation, of injury, etc.

The method of monocular gymnastics in these cases will depend upon the interest of the patient, the age, occupation, etc. In children too small to wear glasses, or to wear the blinder willingly, I keep the good eye under continuous mydriasis for weeks, or even for a month or two. Some ladies prefer holding the fan, a bit of paper, etc., before the sound eye while exercising the weaker one. I have, during the past year or two, ordered the patient to get a disc of black rubber fitted with two hooks, so that it may be hung on the spectacle-lens in front of the good (unclosed) eye. Such discs are supplied by my opticians, who have prepared them in accordance with my request. The patient is to read print of a size that can be easily distinguished, and only so long as signs of positive discomfort or weakness do not appear. Some patients can at first hold the image for but a few seconds. The shorter the necessary duration of such periods the more frequently they should be undertaken. Some patients can read or work with the single eye for an hour or two without trouble. The plan that has proved of most service, and has been productive of the best results, is to use "the blinder" when eating the meals. If living at home, the extra blinder is left at the plate as a reminder, and the practice is excused by friends. It gives an hour or more of varied and easy exercise without loss of time or the annoyance of special attention to the matter. I have a patient, a jeweler, who works at his bench with his blinder, in all one or two hours a day, and whose power and vision have been greatly improved thereby.

A certain proportion of cases do not report; a few get tired, or are indifferent to the matter. The following cases illustrative of the method and of its results may be cited:

CASE I.—Mrs. H., nineteen years of age, has had severe and continuous headache from early childhood, with gastric trouble, malnutrition, etc. Natural vision is R. 20/XX; L. 10/CC. Mydriatic refraction =

R.—sph. 0.25 D, ◯ + cyl. 0.50 D, ax. 90° = 20/XX+.
L. + sph. 2.50 D, ◯ — cyl. 5.50 D, ax. 180° = 20/XL.
With muscular balance.

After the return of the accommodation, and with the proper correcting glass, the left eye could read only Jaeger 14 at twelve inches.

Monocular exercise was ordered. In three months all headache had disappeared, the distant vision of the left eye, both at near and distant range, equalling that of the right eye.

CASE II.—Miss M., aged twenty, had the following defect:

R. + sph. 0.75 D, ◯ + cyl. 0.75 D, ax. 1.25° = 20/L.
L. + sph. 0.50 D, ◯ + cyl. 3.50 D, ax. 1.15° = 20/C.

Careful instructions as to ocular gymnastics has improved the vision in four months to R. 20/XX; L. 20/L +.

CASE III.—Mrs. R., aged fifty-one, had the following refractive error:

R. 20/XXX + sph. 0.37 D, = 20/XX.
L. 10/CC + sph. 3.00 D, ◯ + cyl. 1.00 D, ax. 90° = 20/CC.

With the left eye the patient could read only the large-print "Scripture leaflets" hung in rooms—the only thing I could get for her of sufficiently large-sized letters with which to exercise the eye. One year later, after more or less exercise of this eye alone, she was able to read Jaeger 12, slowly.

CASE IV.—Miss R., aged twenty-five, under homatropine was found to have the following error of refraction:

R.—sph. 3.00 D, ◯ — cyl. 0.50 ax. 150° = 20/LXX+.
L.—sph. 7.00 D, ◯ — cyl. 0.50 ax. 180° = 20/LXX.

Eight months later the vision was: R. 20/XX? L. 20/XL.

CASE V.—Mrs. K., aged forty-five, had 20/XL vision in the right eye, with a compound myopic

astigmatism twice as great in this eye as in the left. There were six degrees of exophoria. Proper correction of all ametropia and insufficiency with monocular exercise relieved the life-long sick-headache, etc., and in five months the vision of the left was brought to the normal.

CASE VI.—Miss S., thirty-five years of age, had had frontal headaches all her life, and, with much near-work, ptosis of the left lid. Refraction was:

R.— sph. 1.50 D, ◯ + cyl. 5.00 D, ax. 105° = 20/LXX.

L.+ cyl. 1.25 D, ax. 80° = 20/XX.

Five months later, after the monocular course of gymnastics, all headache and ptosis had disappeared, and the vision of the right eye was 20/XX?

CASE VII.—Mr. P., twenty-five years of age, was found to have the following refraction:

R.— sph. 0.25 D, ◯ + cyl. 1.00 D, ax. 125° = 20/XX.

L.+ sph. 0.75 D, ◯ + cyl. 3.00 D, ax. 180° = 20/LXX.

He had been wearing a plane glass. After mydriasis had passed off he could, with proper correction, barely read with the defective eye Jaeger 10. Three months later he read Jaeger 4, with ease.

CASE VIII.—Miss M., forty-six years of age, gave a history of a lifetime of sick-headaches, once or twice a week, with anorexia, anemia, etc. She was wearing:

R.— sph. 3.00 D, ◯ — cyl. 2.25 ax. 180°.
L.+ sph. 0.75.

This had been given her for constant use, although her age was forty-six, and she was employed at writing all day. I found that her refraction was:

R.— sph. 2.50 D, ◯ — cyl. 5.00 D, ax. 165° = 20/LXX.

L.+ sph. 0.37 D, = 20/XX.

Hyperphoria of 3°.

A few months after correcting the ametropia, presbyopia, and hyperphoria, with monocular exercise of the right, the vision in that eye had improved to 20/XL, and all the reflex symptoms mentioned had disappeared.

CASE IX.—A little girl of nine was greatly afflicted with night-terrors, somnambulism, headache, anorexia, nervousness, etc. Her refraction was as follows:

R.+sph. 0.75 ◯+ cyl. 5.00 D, ax. 100°= 20/LXX.
L.+sph. 1.00 ◯+ cyl. 5.00 D, ax. 85°= 20/C.

The blinder was ordered for the right eye, with daily exercise of the left alone in reading large-print toy-books, in playing, etc. The right eye soon recovered a normal acuity, but it took nearly a year of watchful care and exercise to bring the left to 20/XX?

CASE X.—Mrs. A., has had constant frontal headache for the past five years, culminating in paroxysms of sick headache every few days. When a girl at school she had "numb spells," "blind spells," etc. I found:

R.+ sph. 3.50 ◯ + cyl. 1.00 ax. 150°= 20/CC.
L.+ sph. 1.00 ◯ + cyl. 0.75 ax. 150°= 20/XX.

Persistent exercise with the blinder brought progressive increase of visual acuteness and power. The reading ability descended through all the sizes of letters from Jaeger 18 to Jaeger 8, and from ability to hold the image for only a few seconds, until now, seven months since beginning, she can read ordinary print with the right eye for a half-hour, and distant vision at the last visit was 20/LXX, with improvement still in progress. The headache, anorexia, ill-health, etc., have entirely disappeared.

CASE XI.—A girl of ten years of age, anemic, with ocular and forehead-pain, was refracted on April 16, 1892:

R. 20/LXX + sph. 1.00 ◯ + cyl. 0.25 ax. 90° = 20/XXX.

L. 20/CC + sph. 1.25 ◯ + cyl. 0.37 ax. 90° = 20/LXX.

With esophoria.

With the prescribed exercise of the left eye, the vision in six months had reached 20/XXX, and will doubtless soon be equal to that of the other.

CASE XII.—A lad of seventeen, with a high degree of compound hyperopic astigmatism in the right, and 20/LXX vision, while the left had perfect vision, and a low degree of the same refractive error. The blinder treatment has brought vision in the right eye to 20/XX? in six months.

CASE XIII.—The last case I shall refer to is an instructive one. A gentleman of forty-six years has had severe ocular trouble and headache all his life, but for the past twelve years, these and other symptoms have been excessive, and he has reason, if he but knew it, to preach some useful lessons to ophthalmic specialists. One of these gentlemen, who prides himself on prescribing by ophthalmoscopic examination alone, fitted him with glasses twelve years ago, but with the most heroic endeavor he could not wear them. Vertigo was at this time, and for six years, so pronounced that it was a source of daily wretchedness. Then came the turn of the graduated tenotomist, but the vertigo was worse and mental confusion became so great that pronounced cerebral disease was diagnosticated by physicians. He feared insanity, and was so haunted by suicidal mania that he had to take daily precautions to obviate the thought and the circumstances that might lead to its execution. This went on for years. A firm will has kept the upper hand through all these years. The patient describes his symptoms as "panic-feelings and palpitation of the brain," with extreme nervousness and nausea. The headache has been less of late. Lastly, a famous oculist told him to go to an optician and get whatever glasses should be given to him there. These he has been wearing for reading—what little he can do! They are simple plus spherical 3.00 D lenses, the same for each eye!

After hours of careful work I find his true refraction to be:

R.+sph. 2.00 D, ◯+ cyl. 2.00 ax. 40°=20/XL.
L.+sph. 1.50 D, ◯+ cyl. 1.00 ax. 90°=20/XXX+.

With some exophoria and hyperphoria.

With the right eye alone he can hold an image of

Jaeger 10 but a second or two, the letters then "jump" and fade.

When one thinks of the lifetime during which the poor eyes and the cerebral centers of the last case, for example, have struggled and begged for a bit of intelligent help; when one analyzes the peculiar defect that would not let either eye renounce vision; when one considers the fact that a strong healthy masculine will has fought against this frightful evil, and preserved its defective mechanism so well; or what would have been the result in a woman—when one ponders over these and many such related things, one is pained with sympathy, and indignant at the failure to help.

The age of the patient, of course, has a great deal to do with success of treatment in all these cases, and one fact stands out with clearness: the younger the age at which the treatment is begun the better. Reaction is prompt in the young, and every added year of failure, and wrench, and wreck, makes the task ever more difficult.

I have had something like fifty of these cases, and many had previously passed through the hands of others unbenefited. It would therefore appear that the duty to "fight for a bad eye" is at present not at all recognized. Every such case is pathetic with dumb pleading for a simple bit of help that it should be at once our highest duty and privilege to give. Moreover, to prevent disease is even greater than to cure it, and if taken early in life in no branch of medicine is intelligent prevention of intolerable evil so possible and so beautifully resultful as in painstaking and skilled refraction-work.

TOBACCO AS A CAUSE OF HYPERTROPHY AND DILATATION OF THE HEART: "THE TOBACCO-HEART." WITH A REPORT OF CASES.

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TOBACCO has of late been brought forward so prominently by those who have studied its effects on the human system, as a cause of disease directly and indirectly, but particularly as a causative agent in complicating different diseases, that further investigation on this subject is highly desirable. The phrase "tobacco-heart" is, of course, not without its meaning, and yet it is so vague that its use is often forbidden by the thorough diagnostician, because it implies none of three distinct conditions that may exist as a cause of the use of tobacco.

Having on different occasions met with cases of heart-trouble that were dismissed with the diagnosis of tobacco-heart, and with only the instruction to stop the use of the article, I naturally looked for literature with the hope of becoming more enlightened on that subject. Although reference could frequently be found to the tobacco-heart, I could find no description or report of a case, with the treatment. Knowing the decided effect on the circulation of this article, as seen in the cases of tobacco-poisoning, I made a report on the subject before the Mississippi Valley Medical Association in 1891, and realizing how unsatisfactory was the literature in this line, I determined to begin observations, the results of which it is the object of this paper to report.

Appreciating the strong hold that tobacco has on the American people, even on the medical profession, I am aware that any investigation that points to the baneful effects of its use will encounter the prejudice of the tobacco-user, and at times be met by the assertion that he has used it for years without any apparent harm. To this I shall only reply that I am not reporting his case, but the cases of those who have undoubtedly suffered permanent injury. In so doing, ample time has been taken. In no case has the patient been under observation for less than twelve months, and two cases were studied longer—eighteen months and two years respectively. In each case it has been frequently noticed that the symptoms have abated, with more or less actual improvement in the heart-beat, upon the withdrawal of tobacco, and have recurred within from one day to several weeks after its renewal.

CASE I.—M. K., aged thirty-one years, an unusually energetic person, called February 20, 1892. After some extra exertion the patient had felt a sinking sensation, had staggered, but was able to reach the bed before falling. He had never lost consciousness entirely. The pupils were contracted; the mouth open. There was considerable effort in respiration, which was rapid—about 30 to the minute. The hand was over the precordial region, to which sharp pains were referred. The pulse was very feeble, irregular, from 100 to 104 per minute; the extremities were cold and clammy. Auscultation showed the heart-sounds to be weak and rapid, the first and second sounds alike. I gave a hypodermatic injection of nitro-glycerin and atropine; ordered warm applications to the extremities, sinapisms over the heart, and perfect quiet. On February 21st, by measurement, the heart showed slight hypertrophy; the apex-beat in the sixth intercostal space, about one inch from the nipple line. Several months previously I had seen this case in a similar attack, and I obtained the following history: The man had used tobacco since his eighth or ninth year. His first attack occurred when he was about eighteen years old, and others have followed at intervals of from three months to two years since that time, the intervals growing gradually shorter and the attacks severer. Shortness of breath always followed much effort, and occasionally pains over the heart that prevented the finishing of the task. Believing tobacco to be the cause, I gave instruc-

tions that it be stopped, and that digitalis be administered for a few days. Relief followed. The use of tobacco was begun again two or three weeks before the attack described. A few months later another attack followed the use of tobacco. On October 5, 1892, I examined the patient again, five months after the tobacco had been discontinued, and there had been only one slight attack during that time, and to this slight attention was paid. There was very little if any change in the hypertrophy of heart, but auscultation showed improvement in the heart's action; the first and second sounds were more nearly normal, and the beats 80 to the minute, the patient sitting.

In reporting Cases II and III, I shall be as brief as possible, those points only being emphasized in which they differed from Case I, the symptoms being so nearly the same in each case.

CASE II.—M. T., aged thirty-nine years, has used tobacco since nine years of age. Besides the symptoms of Case I, she had with each attack pain in the abdomen, centering at the umbilicus, and was at times entirely unconscious. The pulse-beat was almost imperceptible. The first and second heart-sounds were precisely alike, with a longer period than normal from the first to the second sound; the action was rapid and irregular. I could not measure the heart satisfactorily on account of the patient's fleshiness, but I could clearly detect hypertrophy. I had the patient under notice for two years, during which time she never stopped the use of tobacco longer than two or three weeks at a time, though reducing the amount greatly. Indulgence in an increased amount for a short time would result in an attack. On September 29, 1892, she had another attack, and denied that she had used tobacco, but the husband told me the next day that snuff had been heavily substituted. When told that this was the same thing, she promised to stop. On October 5th she claimed to be using the smallest quantity of tobacco, and was really improved. The heart-beat was slower, firmer, and more regular, though, of course, hypertrophy and dilatation existed.

CASE III.—V. M., aged forty-one years, consulted me on May 30, 1892. She had used tobacco and coffee since nineteen years old. I found the patient in the same condition as the first case reported. I had seen her in a similar attack six months previously, and had ordered the use of tobacco and coffee to be stopped. The latter was withdrawn, but the former only for a week or so, then used in reduced quantity. At the time of this attack the pipe was being used incessantly. For several days the heart had been thumping and beating irregularly, and upon rising the patient would reel and stagger; sharp pains were experienced at times. The pupils were contracted; the tongue flabby, with several fissures. The same treatment was instituted as in the first case, with strophanthus added. Improvement was gradual. Later the patient claimed that she could not rest or sleep without using a little tobacco. Under the reduced amount she was free from attacks, but hypertrophy increased, and it is only a question of time when the broken compensation will come on again.

On October 5th, comparing her case with the first and second cases, I found that it differed from these as regards the heart-beat, which was slow—68 to the minute—full and strong. The apex-beat was below the sixth intercostal space and near the nipple line, the impulse strongly marked. Continual pain in the precordial region, which I believe would be arrested by stopping the use of tobacco.

During the last eighteen months eight or ten additional cases have come under my observation and treatment, suffering from the effects of tobacco upon the heart, with the symptoms varying in intensity from arhythmia to the severest of the cases reported, but only the three are reported, because they afforded sufficient observation to arrive at a positive conclusion as to cause and effect.

Reviewing these cases, we see three conditions—arhythmia or allorhythmia, hypertrophy, and dilatation—which manifest themselves after the prolonged use of tobacco. These symptoms invariably disappear, or are alleviated, according to the existing state of the heart, when the tobacco has been withdrawn. Surely, then, tobacco must be a causative agent, either directly or indirectly, or both, in their production. How is this so?

Tobacco is a *motor-depressant*. Most of us are familiar with the paralyzing effect of the first cigar, or "chew," and we know how the system gradually becomes inured to its use. On some, after a short time, tobacco has apparently no hurtful effect. This number would, we believe, by careful chest-examination be reduced to a minimum, as has been fairly demonstrated by examinations at Yale College of the candidates for the boat crew and ball teams (see THE MEDICAL NEWS, July 11, 1891). In others the function of the stomach is disturbed directly,[1] the nervous system indirectly; and possibly by a direct effect upon the pneumogastric, the heart-beats are increased in number. As a result of the dyspepsia and disturbed innervation we find arhythmia. The trouble may go no further than this, and is invariably arrested if the tobacco be discontinued. On the other hand, if it is continued, the irregular action of the heart, which is quite an accommodative organ, may cause its growth, particularly of the left ventricle. Again, even when there is no arhythmia, the depressing effect of tobacco upon the pneumogastric, the inhibitory nerve of the heart, may allow increased action of the accelerator nerves, and consequently an increase in the number of heart-beats. Then, according to the law governing muscles that, within certain limits, if the nutrition is kept up, increased work is followed by

[1] Ydan Pouchkine: Annals of the Universal Medical Sciences, vol. iv, I. 7.

increased size, hypertrophy of the heart results. This, of course, is very gradual, and so long as full compensation keeps up, the patient may never be made aware that his heart is abnormal. This is the condition of many of the tobacco-users of to-day; but let them take a run around the square, and the result may be serious. Dilatation usually accompanies hypertrophy, and a period of broken compensation is likely to follow. This may be caused by increased pressure within the cavities, as in continued physical strain; or by impaired resistance, due to weakening of the muscular wall, as in disease; generally it is the latter when tobacco is the cause, and, if the disease is acute, we have a condition so common during the prevalence of influenza, *heart-failure*. If it is merely general debility with physical effort we see the condition described in the three cases reported above.

I have not seen a case of dilatation without hypertrophy of the wall, but I am fully convinced that when the tobacco has first caused extreme emaciation with impoverished system, as it sometimes does, such a condition may result.

I realize that the three cases reported are too far advanced to obtain the maximum beneficial result from the withdrawal of the cause, but I feel that if it could be stopped entirely, as proved by the one case, that the progress of the disease would be arrested. As to the cases not so far advanced, I shall mention one as an example, which answers well for the others:

Dr. C. H. has used tobacco incessantly. For several weeks he has suffered with severe pain in the precordial region, and with arhythmia; the pulse is from 90 to 96; hypertrophy is very slight. I ordered tobacco to be stopped, which was done. Relief was almost immediate. I see the gentleman every few days, and now, two and one-half months later, the trouble has entirely disappeared.

I acknowledge the incompleteness of this paper, but feel that attention of the medical profession to this subject, with careful study of the effect of tobacco upon the human system, will probably result in establishing the proof that it is a most important factor in causing and complicating cardiac disease.

THE PREVENTIVE TREATMENT OF TETANUS.[1]

BY T. W. SIMMONS, M.D.,
OF HAGERSTOWN, MD.

THE fact of the incurability of tetanus, together with the theory that its cause lies in a specific bacterium, has suggested to me the importance and feasibility of the preventive treatment of the disease. It was after smallpox had defied all manner of curative treatment for over eight hundred years that Edward Jenner was moved to the discovery and adoption of a preventive treatment that not only fulfilled its mission in preventing that loathsome and dreaded disease, but is to-day emulated in other fields of scientific research.

Pasteur, as did Jenner, but recently demonstrated the wonderful influence of preventive treatment by inoculation, the latent or incubative period of hydrophobia affording a favorable opportunity in which preventive treatment is brought to bear. Bites by rabid animals on the head and face furnish the most certain hydrophobic results, as shown by a mortality, it is alleged, of from 80 to 88 per cent., which is claimed as having been reduced under Pasteur's preventive treatment to 3 per cent. If true, this is a most wonderful life-saving result.

While I do not propose to prevent tetanus by inoculation, as did Behring and Kitasato, I desire to remind you of the great success that has attended preventive treatment in those dreadful diseases that have so signally defied all human efforts to cure. But I do claim that tetanus should be classified with such fatal and incurable diseases, and that there is a preventive treatment for it as simple and feasible as that of smallpox or hydrophobia, and even more so. Tetanus and hydrophobia resemble each other in many prominent respects, so much so that surgical writers generally differentiate them that confusion in diagnosis may not arise; they, however, differ in other important respects that are seldom considered, viz., tetanus is much more common than hydrophobia, and the mortality from it yearly is far greater. In the *New York Medical Record* of August last I find that the Massachusetts State Board of Health declared that little over 100 deaths from hydrophobia have occurred in that State within the last half-century. In an experience of over thirty years I have never seen a case of hydrophobia, nor have I ever, to use the expression of a professional friend, met with a physician who has seen one; yet I have seen and treated a number of cases of tetanus all of which have terminated fatally. May I not, then, ask how so much more prominence and importance should be given to the prevention of hydrophobia than to that of tetanus? For example, a boy is bitten by a rabid dog. The news is promptly heralded throughout the country, and perhaps abroad. He is doubtless hurried off to a Pasteur institute somewhere for preventive treatment; great anxiety is manifested for his safety, etc. But suppose that boy wounds the sole of his foot, and goes home crying to his mother, when upon inspection it is found that he has trodden upon a rusty nail that was lying in the street or garden, and that this had penetrated deeply into his foot. What is thought

[1] Delivered before the Washington County Medical Society of Maryland, November 9, 1892.

of it? What is done? Nothing, perhaps, beyond the tying of a piece of bacon rind about it with a rag; and yet this very wound, from the nature of our past experience, may be fraught with as much danger as the one made by the rabid dog.

The specific bacterium of tetanus, it is claimed, was discovered by Nicolaier, Rosenbach, and Kitasato, and is represented to be a large, slender, motile rod, with sporulations at one extremity, giving it a characteristic drumstick shape. It is anaërobic by nature, and found to exist in the dirt and dust of the street, in the garden, in the stable-yard, upon nails, iron rakes, forks, splinters, thorns, etc., these constituting the most usual means of introducing it into the body. When once in a wound it immediately sets to work and produces, as it is said, ptomaïns, tetanotoxin, spasmotoxin, etc., the active viruses which, when absorbed into the system, give rise to that terrible disease, tetanus.

This theory has been accepted, I believe, by all surgical authors of the present day, to the exclusion of that of traumatism of sensitive or motor nerves. The fact that the feet and hands are more exposed to this class of injuries explains their frequent association with tetanus, and not the injury of their numerous nerves. The specific bacilli do not pass beyond the point of introduction. They are not, it is said, found in the blood or tissues generally, but are confined to the focus of infection. There they make their abode for reproduction of their kind, and for the distillation of that virus which is slowly but surely absorbed into the system with all its fearful consequences.

In the face of this representation of indisputable facts, is it not clear that our plain and unhesitating duty is to kill those deadly bacilli while ensconced within their narrow confines, and before infection takes place? To do this, as I before said, is most simple and feasible. The technique that I have adopted is as follows: I remove all foreign substances from the wound, and thoroughly cleanse the surface about it with a probe or olive-pointed hypodermatic needle, made of gold, about two inches long, and something larger than an ordinary hypodermatic needle. Such a needle has been made for me by F. Arnold & Son, of Baltimore. With this needle attached to an ordinary syringe I inject into the wound, if painful or sensitive, a four per cent. solution of cocaine, which is allowed to remain until its full effects are produced. I then draw out what may remain within the wound, and with the same instrument inject the following:

Argenti nitratis	grs. v.
Aquæ	℥ss.

Or,

Hydrarg. chloridi corrosiv. . . .	grs. ij.
Acidi carbolici	grs. xv.
Alcoholis	℥ss.

The alcohol is used here instead of water, because it diffuses more rapidly throughout the wound, and it is of great importance that the injection should reach the full depth of the puncture. This procedure, after the use of the cocaine solution, is painless, and the wound is thereby rendered far more comfortable. One injection, if well and deeply applied, will be sufficient. This operation should be performed as soon after the injury as possible, and surely before its lumen begins to close by granulations. It is, of course, presumed from what I have said, that the wound to which this operation is applicable is a punctured one, within reach, and as you well know, this kind of wound is commonly attendant upon tetanus-infection. My experience in the preventive treatment has been entirely satisfactory, as far as it could be judged, for while it is true that all punctured wounds may not be infected by specific bacteria, yet their presence should always be feared, and this simple operation never omitted, as it removes all possibility of danger, and besides has the advantage of relieving pain and soreness, and promotes rapid healing of the wound. So common has it become to disregard these punctured wounds, particularly such as occur in the ordinary course of life, that I feel that their importance and danger should be emphasized and proclaimed. Parents and teachers should instruct the children under their care of the absolute danger of such iniuries when neglected. While it would be impossible at all times to anticipate the danger that might attend upon small and trivial wounds, as they often give rise to the most unexpected and terrible developments, yet, to treat such as are more pronounced and suspicious I feel confident in saying would save many more lives than any curative treatment proposed.

CLINICAL MEMORANDA.

ACQUIRED GASTRIC DEFORMITY.

BY ALLEN A. JONES, M.D.,
LECTURER ON PRACTICE OF MEDICINE AND INSTRUCTOR IN PRACTICE, MEDICAL DEPARTMENT, UNIVERSITY OF BUFFALO.

A. V., aged thirty years, a farmer, consulted Dr. Stockton November 3, 1892. His father died of pulmonary tuberculosis at the age of fifty-five, and his mother at the age of forty-four from some disease that induced anasarca; the family history was otherwise negative. The patient's previous history was good, and he was healthy until about five months prior to the date named, at which time he suffered acute epigastric pain, setting in sometimes directly, and sometimes several hours after meals, and disappearing with vomiting. A diagnosis of biliary colic had been made. On presenting himself he was pale, sallow, and thin, had some headache, slept poorly, was very weak, and complained chiefly of gastric pain, nausea, vomiting, and sour stomach, belching large volumes of foul-smelling gas. The bowels were

persistently constipated; the tongue pale and tremulous, but not heavily coated; the urine was alkaline and excessively phosphatic, and he was very anemic.

External examination alone did not establish the diagnosis of gastrectasia; so I introduced the soft rubber tube four hours after a breakfast of chopped lean mutton, bread and butter, and coffee. When the distal end of the tube passed twenty inches beyond the teeth, there followed a copious flow of undiluted gastric contents, overfluid, dark colored, and emitting that foul yeasty odor so characteristic of pronounced gastric dilatation. At twenty-four inches the tube met with intragastric resistance, beyond which it was not forced; but therefrom I withdrew some potato eaten eighteen hours, and, finally, cranberry seeds taken four days before. A great deal of thick, tenacious mucus and all of the food taken at breakfast were present. Upon withdrawing the tube a small bit of unhealthy mucous membrane adhered, seemingly from the edge of an ulcer.

Chemical examinations of the filtrate showed the total acidity to be 80 per cent.; hydrochloric and lactic acid were both in excess; a little albumin, but no syntonin was present; the biuret reaction was well marked; peptone and propeptone were present, as determined by individual tests; erythrodextrin was present; and rennet was absent.

The following day a breakfast of bread and chopped beef was withdrawn four hours after its ingestion, with the distal extremity of the tube twenty inches from the teeth; then the tube was gently passed beyond the obstruction, and with the distal end twenty-eight inches from the teeth, some potato eaten forty-two hours, and cranberry seeds taken five days previously, were removed. The foul fermentation-odor was present, hydrochloric acid was in excess, and there was an abundance of mucus. The next day lavage was practised three hours after a breakfast of Zwieback and hot milk, and there was withdrawn about a pint of dark grumous material, emitting the usual, characteristic odor. At this sitting the obstruction was again felt at twenty-four inches, and the tube was pushed beyond it, but no more potato or cranberry seeds were found, though mucus and hydrochloric acid were in excess.

While it is difficult to make a diagnosis of gastric deformity, the evidences in the present case all point to hour-glass contraction, the result of gastric ulceration. At any rate, there are present two pouches, the second of which contained remnants of past meals twenty-four hours after the first had been thoroughly cleansed by lavage; the second pouch can be reached only after careful manipulation with the tube, which was painful to the patient, and followed, in one instance, by slight hemorrhage.

436 FRANKLIN STREET.

REUNION OF A PORTION OF AN AMPUTATED FINGER.

BY ORVILLE HORWITZ, B.S., M.D.,
LECTURER ON GENITO-URINARY AND VENEREAL DISEASES IN THE SPRING COURSE, AND DEMONSTRATOR OF SURGERY IN JEFFERSON MEDICAL COLLEGE.

A CASE resulting in a gratifying and complete reunion of severed parts presented itself at the Jefferson College Hospital, which I am tempted to report, though I am aware that it but accords with the experience of the profession.

On the 20th of October last, a young man, twenty years of age, was brought to the hospital, who stated that whilst cutting a piece of sheet tin his forefinger accidentally became entangled, and before it could be disengaged the upper portion was amputated. He brought with him the severed portion wrapped in a dirty rag, as was likewise the stump.

On examination it was found that the knife had entered at the junction of the skin and nail, had passed obliquely downward, emerging just above the first joint, making a clean cut and completely severing the upper portion of the finger. The accident had occurred some twenty minutes before I saw the patient.

With the hope of having the stump reunite to the finger, I placed the amputated portion in a solution of 1:1000 mercuric chloride, whilst making the necessary preparations. The hand, being very dirty, was first scrubbed with bichloride soap, washed with turpentine, and once more scrubbed with soap, and then placed in a basin of warm bichloride solution and allowed to soak for fifteen minutes.

The amputated portion having been scrubbed and cleaned, was nicely adjusted; accurate apposition having been obtained, it was secured to the stump by delicate sutures. Care was taken to pass a suture through the divided portions of the nail, so as to give the parts firmness and stability. The wound was then dusted with iodoform and dressed with bichloride gauze. The hand was placed in a splint, and the patient was directed to return at the end of two days.

At the expiration of the prescribed time the patient again presented himself, when, on examination, it was found that the parts had regained their natural appearance; warmth had returned to the severed parts; the color under the nail had become as natural and as fresh-looking as though no wound had ever existed; and what was most gratifying, there was perfect sensation at the end of the finger, showing that the extremities of the nerves were in complete apposition, and that they had already become reunited. Sixteen days after the date of injury the individual returned to work, having perfect use of his hand and finger.

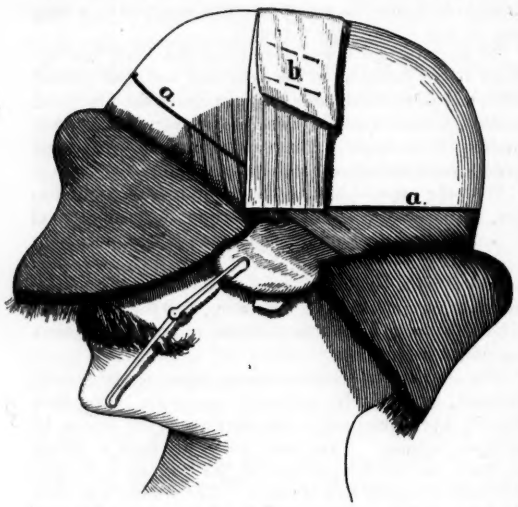
SIMPLE METHOD OF RETAINING THE CALVARIUM IN PLACE AFTER POST-MORTEM EXAMINATION.

BY RICHARD SLEE, M.D.,
PATHOLOGIST TO THE NORWEGIAN HOSPITAL; PATHOLOGIST TO THE CENTRAL THROAT HOSPITAL AND POLYCLINIC DISPENSARY; ASSISTANT PATHOLOGIST TO THE METHODIST EPISCOPAL HOSPITAL, AND ASSISTANT TO THE DEPARTMENT OF PHYSIOLOGY, HOAGLAND LABORATORY.

To retain the calvarium in place after conducting an examination of the head in the course of a post-mortem examination is often a very troublesome and, at the same time, important piece of work. This is especially true in private cases, where the cosmetics are of importance. The ordinary method, that of suturing the divided temporal muscles, seldom answers the purpose; in consequence of the stretching of the temporal muscles, the calvarium becomes displaced, and we have an unsightly ridge just over the eyes, apparent through the integument of the forehead, indicating the line of the cranial incision.

Double-ended tacks are sometimes used, but it requires some skill to manage them, and the noise caused in introducing them is objectionable in private houses.

The circular cranial incision recommended by some authorities is not generally used, as it offers no advantage over the plan shown in the cut, *a–a* representing the usual lines of incision. The saw-cuts cross each other about



one inch above and a little posterior to the external auditory meatus on both sides of the head. If after removal of the calvarium and brain the posterior incision is continued forward in the direction of the zygomatic fossa, there are formed slits in the temporal bones, each about an inch long.

An ordinary roller-bandage, an inch or so in width, is now stretched across the skull and crowded edgewise into the saw-slits. The calvarium is replaced and the extremities of the bandage are brought over the vault of the frontal bone and firmly secured by a flat knot or pins, as is shown at *b* in the cut. The divided temporal muscles may be sutured or not, as seems desirable. It will now be plain sailing to return and suture the scalp in place, as the calvarium will not slip about under one's hands.

This scheme was suggested by Mr. Hall, a medical student who assisted in the mortuary of the Methodist Episcopal Hospital, Brooklyn, N. Y., and I am sure it will be found of service.

MEDICAL PROGRESS.

A Contribution to the Biology of the Cholera-bacillus.—UFFELMANN (*Berliner klin. Wochenschr.*, 1892, No. 48, p. 1209) reports the results of a study of the life-history of the cholera-bacillus when exposed to various conditions. He found that the organisms may continue to live in still water, not exposed to the rays of the sun, for one or two days, or even for five or six days; if the water has a temperature of from 66° to 70° multiplication of the bacilli may take place in the first fifteen or sixteen hours. The bacilli may survive for a day or two days in cow's milk, even though acid fermentation have taken place; at temperatures between 64° and 72° multiplication may take place in the first twelve or sixteen hours. Upon slices of rye bread, unprotected from the air, cholera-bacilli may survive for a day; if the bread be wrapped in paper, the organisms may survive for three days; and if the bread be kept under a bell-jar the organisms may survive a whole week. On the surface of feebly acid butter the organisms survive for from four to six days; in the interior of butter a shorter time. On roast meat, protected from drying by being placed under a bell-jar, they may survive for at least a week; upon smoked fish, kept under similar conditions, they may live to the fourth day. On the surface of fruit, the organisms, after drying, live for from twenty-four to thirty hours; kept under a glass jar, to the end of the fourth day; on fresh cauliflower, for from one to three days. Upon the printed pages of a book they live, after drying, for at least seventeen hours; on writing-paper enclosed in an envelop at least twenty-three and a half hours; upon postal cards for at least twenty hours. Upon copper and silver coins and upon copper plates the bacilli die in from ten to thirty minutes. Upon textures that are apparently dry, they may survive for four days; upon moist goods for as long as twelve days, perhaps longer; under the condition last named they may even multiply. Flies may remain infectious for two hours after having been brought in contact with moist cholera-matter. The organisms may live for an hour, but not for two hours, upon the dry hand.

The Union of Severed Fingers—At a recent meeting of the Johns Hopkins Hospital Medical Society, FINNEY (*Bulletin of the Johns Hopkins Hospital*, iii, 26, p. 122) reported the case of a machinist, the extremities of the middle and ring fingers of whose left hand were cut off, the former just beyond the last phalangeal joint, and the latter at the root of the nail. The man applied for treatment some seven hours later, bringing with him the amputated segments wrapped in newspaper. The fingers were soaked for a short time in a warm 1 : 2000 solution of mercuric chloride. The cut extremities were placed in simple warm water. The surfaces were freshened, and the parts were carefully approximated and sutured. Appropriate support was applied. At the end of a week the parts looked well, and the man stated that sensation was present in the fingers. After nearly three years he had perfect motility and sensibility, and there was only the slightest deformity.

Goiter.—WETTE (*Archiv f. klin. Chirurgie*, xliv, No. 3 u. 4) concludes an elaborate study of the symptomatology and surgical treatment of goiter, as well as the dependence of exophthalmic goiter upon the bronchocele, with an expression of the opinion that the best and most efficacious treatment of exophthalmic goiter consists in the partial removal of the bronchocele. He considers the latter as one of the important causes of exophthalmic goiter. The exophthalmos and the palpitation of the heart may result from pressure upon the sympathetic nerve, or in consequence of a reflex neurosis induced through the terminal filaments of the sympathetic in the thyroid gland. The group of atypical nervous symptoms may be ascribed to a general intoxication by chemical products formed in the pathologic thyroid gland.

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SATURDAY, DECEMBER 31, 1892.

NATIONAL HEALTH-ORGANIZATION.

THE United States should have a National Health-Bureau, the duties of which should include the collection and publication of information with regard to the causes and the means of prevention of disease, and especially of the contagious and infectious forms of disease, the preparation of rules and regulations for National Quarantine, and the systematic supervision of the manner in which these rules and regulations are carried out.

This bureau should not consist alone, nor should it be under the control, of any single official, and in the exercise of its legislative functions it should be a representative body, board, or council.

Although we have advocated the creation of a Cabinet officer of Health, there lies herein the danger of change of incumbent with change of administrative control—a danger that would militate against the usefulness of the office.

The enforcement of the quarantine regulations made or approved by this representative body should be the business of the Treasury Department and of its subordinate bureaus, more especially the Marine-Hospital Service; in other words, the executive work of quarantine should be separated from the legislative and scientific work of the bureau, although it should be under its control so far as the prescribing of methods, the granting of funds, and the observation of its work are concerned. To emphasize this separation, and to make it clear that quarantine is not the sole or even the chief business of the National Health-Bureau, it might be better to place this bureau under the Department of the Interior than under the Treasury Department.

The organization of the National Bureau should include a representative body for legislation, and an executive officer or Commissioner of Health.

The representative body should include one person from each State, to be appointed by the President. The majority of these should be practical sanitarians, or physicians of good repute, but some of them should be men who will fairly represent the commercial interests of the country, including boards of trade, and companies controlling great lines of travel and traffic. This body might also properly include one representative each from the State Department, the Treasury Department, and the Department of Justice. It should meet once a year, or when specially summoned by the President. Its duties should be to prepare rules and regulations for the proclamation and enforcement of National quarantine, in accordance with United States laws, which, when approved by the President, shall have the force of law; to consider estimates of funds for carrying out such rules and regulations to be submitted to it by the Secretary of the Treasury; and to return the same to him with its recommendations for transmission to Congress. It should also make rules and regulations governing the action of its own executive officer or Commissioner of Health, as to the collection and publication of vital statistics; the promotion of investigations into the causes and means of prevention of disease; and the collection of information as to the condition and operations of the quarantine service; and should revise the estimates of funds required for these and for other purposes connected with the work of the National Health-Bureau, transmitting such revised estimates to the Secretary of the Interior to be by him forwarded, with his own recommendations, through the usual channels.

These are merely the broad outlines of a plan for a National health-organization that seems to us to be in accord with the general principles that govern our National organization in its relations to the several States.

The chief objection to be made to it is that such

a council as we have indicated would be too large and too costly, and that a much smaller number—say five or seven—representing different grand divisions of the country, instead of each State, would be cheaper and more effective; but this plan was tried in the National Board of Health and the results were not satisfactory. In our previous editorial upon National Quarantine (THE NEWS, Dec. 24, 1892), we have indicated the essential principles which, as it seems to us, should govern Congressional legislation upon this subject, the chief of which is that State and local quarantines are to be done away with by mutual consent of the States.

The National Health-Bureau must command the respect and approval of the great majority of the sanitary officials of the several States, and also of the great commercial interests of the country. For well-known reasons, that need not be repeated here, the Marine-Hospital Service has acquired a reputation that makes it impossible to grant to it the powers and responsibilities that should belong to such a bureau, and although it will doubtless hold to its traditions and oppose every plan for National health-organization that does not give to it, or, what is practically the same thing, to the Secretary of the Treasury, the supreme headship and control, we are nevertheless of the opinion that in the near future there will be Congressional legislation that will provide an ample field of executive work for this bureau, but will place the control of our National health-interests in the hands of an entirely different organization, in which the special knowledge of experts in all the great interests involved will be fairly and properly represented.

THE METABOLISM IN GLYCOSURIC CONDITIONS AND THE TREATMENT OF DIABETES MELLITUS.

IN a recent number of THE NEWS we drew attention to the chemical methods that make it possible to differentiate the various carbohydrates that under pathologic conditions may occur in the urine. Going back a step further, it may be interesting to discuss briefly the modern doctrines concerning the metabolism that goes on in such cases, and see how far a rational treatment for diabetes can be deduced therefrom.

WORM-MÜLLER, MORITZ, and others have shown that transitory glycosuria may occur even in health, after the ingestion of large quantities of grape-sugar. The amount of glucose that must necessarily be taken by a healthy adult to produce this physiologic glycosuria varies, according to COLASANTI, from two hundred to two hundred and fifty grams. Not only is there a glycosuria of alimentary origin, but there can also be an alimentary maltosuria or lactosuria—in fact, for *every* carbohydrate there is a maximum quantity which the organism can digest and transform; if more than this be ingested the substance will appear in the urine (VON JAKSCH). Nor have the clinicians been slow in applying this knowledge as an aid in diagnosis. The pathologic significance of a glycosuria appearing after a dose of, say, one hundred grams of pure glucose is easily appreciated. KRAUS and LUDWIG found that such a quantity produced glycosuria in cases of atrophic cirrhosis of the liver, cyst of the pancreas, diabetes insipidus, and tachycardia. CHVOSTEK was frequently able with this amount to produce glycosuria in patients suffering from exophthalmic goiter. VON BLOCH'S investigations extended over fifty-one different cases, to each of which he gave one hundred grams of pure grape-sugar; in only four did the substance appear in the urine, and in all of these diffuse brain-lesions existed.

In endeavoring to account, therefore, for the appearance of a glycosuria, one will in future have to think not only of diabetes and diseases of the liver and pancreas, but also of diffuse cerebral changes, particularly those of syphilitic and alcoholic origin. In studying a given case we should attempt to determine the more direct origin of the sugar excreted. Not every *transitory* glycosuria is an *alimentary* glycosuria. Even in diabetes itself, while in the milder cases and in the earlier stages, the glucose has its origin for the most part in the excess of carbohydrates ingested, we must believe, from the conclusive evidence that has been brought forward by those who have worked on the subject, that in every case there comes a stage when the glucose excreted is derived from the albumins of the organs of the body. The proof of this may be found in the study of the products of metabolism that the urine contains. The findings in alimentary glycosuria are very different from those in severe cases of diabetes. In the latter, besides the glucose and an increased amount of most of the nitrogenous substances (urea, uric acid, etc.), there is a marked excess of certain non-nitrogenous bodies, among which may be mentioned acetone, diacetic acid, β-oxybutyric acid, and the lower members of the fatty acid series (formic,

acetic, and propionic acids); in the former there is rather a diminution of the non-nitrogenous substances. The importance of examining the urine quantitatively for these becomes at once obvious, and thanks to the clinical chemists we are now provided with methods that render their estimation tolerably easy.

VON JAKSCH, in his address at Carlsbad in June, 1892, spoke of the relation that he has shown to exist between the metabolism of fever and that of diabetes. In the acute febrile affections we have (with the exception of the glucose) precisely the same evidence of the breaking down of the albumins of the organs that we have in diabetes—the acetonuria, the diaceturia, the lipaciduria, the increased excretion of the ordinary nitrogenous bodies, all are marked. The diabetes-patient is then like a man with fever, but instead of temperature-elevation he has glycosuria. This similarity is made more striking by the report of a case studied by ENGEL, in which a girl with diabetes had an attack of typhoid fever, and at the height of the febrile process excreted no sugar. Such observations are more than suggestive; they are the forerunners of important discoveries.

The older modes of treatment of diabetes have to be considerably modified. There must be no routine management. When there is a syphilitic history, mercurial inunctions often do good; in other cases they rather do harm. A strictly meat diet cannot be recommended, except in the early stages or in mild cases. VON JAKSCH insists on the daily examination of the urine for acetone and aceto acetic acid; as soon as these bodies appear, he advises a mixed diet with, if possible, a stay at Carlsbad. In all severe cases a mixed diet is preferable, and if there be many acid products in the urine, he suggests that from ten to twenty grams of sodium carbonate be given each day.

The use of the synthetic sugars of FISCHER as sweetening agents has so far not been extensive enough to permit any final judgment upon their value. The *Aleuronbrod* introduced by EBSTEIN, of Göttingen, a kind of bread made from pea-meal, has not been so much in favor since botanists have shown that what were microscopically regarded as "albumin crystals" have proved to be only shrunken vacuoles with cellulose walls.

The administration of opium in some form is a measure to which we must resort in nearly all severe cases.

JOHNS HOPKINS UNIVERSITY MEDICAL SCHOOL.

BY a noble gift of more than $300,000, MISS MARY GARRETT has completed the supplementary endowment of half a million of dollars, the sum fixed by the trustees as necessary to equip the departments yet unorganized and insure the proper maintenance of the school. The laboratories of Chemistry and Physiology have been organized since the foundation of the University, that of Pathology since 1884, while the departments of Medicine, Surgery, and Gynecology were established in 1889, when the Johns Hopkins Hospital was opened. There remain the departments of Anatomy and Pharmacology to complete the school, and for these, as well as for other necessary outlays connected with organization, the fund now raised will amply suffice.

No date has yet been decided upon for the opening of the school to undergraduates. We trust it may not be long delayed. There is certainly nothing more needed by American medicine and American civilization than uncommercialized medical teaching.

REVIEWS.

A MANUAL OF ORGANIC MATERIA MEDICA. Being a Guide to Materia Medica of the Vegetable and Animal Kingdoms. By JOHN M. MAISCH, Ph.M., Phar.D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. Fifth edition, with 270 illustrations. Philadelphia: Lea Brothers & Co., 1892.

THIS is an excellent manual of organic materia medica, as are all the works that emanate from the skilful pen of such a successful teacher as John M. Maisch. The author makes no pretensions, but the book speaks for itself in most forcible language. In the edition before us, which is the fifth one published within the comparatively short space of eight years (and this is the best proof of the great value of the work and the just favor with which it has been received and accepted), the original contents have been thoroughly revised, and much good and new matter has been incorporated. Part I is devoted to Animal Drugs; Part II to Cellular Vegetable Drugs; and Part III to Drugs Without Cellular Structure, after which follows an excellent list of drugs arranged according to their origin.

A good feature of the book consists in its giving the proper pronunciation of the systematic plants and animals, which is indicated by marks of accent. In this the United States Pharmacopeia has been chiefly followed; but in many instances in which different pronunciations appear to be sanctioned by good authorities, the several forms are given side by side.

We have nothing but praise for Professor Maisch's work. It presents no weak point even for the most

severe critic. The book fully sustains the wide and well-earned reputation of its popular author. In the special line of work of which it treats it is fully up to the most recent observations and investigations.

The illustrations are good and the alphabetical index all that could be desired.

After a careful perusal of the book, we do not hesitate to recommend Maisch's *Manual of Organic Materia Medica* as one of the best, if not the best, work on the subject thus far published. Its usefulness cannot well be dispensed with, and students, druggists, pharmacists, and physicians should all possess a copy of such a valuable book.

A POCKET MEDICAL DICTIONARY, GIVING THE PRONUNCIATION AND DEFINITION OF ABOUT 12,000 OF THE PRINCIPAL WORDS USED IN MEDICINE AND THE COLLATERAL SCIENCES. By GEORGE M. GOULD, A.M., M.D. Philadelphia: P. Blakiston, Son & Co., 1892.

THE author lays especial emphasis upon the fact that this little volume of 317 pages contains about double as many words pronounced and defined as are usually included in pocket dictionaries, and the publishers aver that, by reason of its shape, etc., it occupies no more pocket-space than is customary in the less-inclusive booklets. It is also said that the book is not a museum of the antiquities of medical lexicography, a gathering of medieval and ancient instruments of word-torture, but that the living, new words of modern medicine have been sought out and put down. Useful tables of muscles, nerves, arteries, microörganisms, thermometric scales, and dosage are also praised. Printer and binder have certainly done their work "most excellent well;" but, as is usual, the author and proofreader have allowed many slips to occur. For instance, the pronounced *eosin* contradicts the accent of the word as first given. *Acerate*, *achylosis*, *achymosis*, *acidosteophyte*, need looking after. *Impaludism* should have been defined as the condition or state of malarial poisoning. The new word *katabolin* has been unfortunate in a slight misplacement alphabetically, and in a manifest typographic error. *Generic* and *gemellus* and *endometritis* have a supernumerary and wrong sign in the pronunciation. The definition of *catoptric test* is incomplete. Although wisely adopting the modern spelling, we notice the incongruities of *centimetre*, *centilitre*, etc., instead of *centimeter*, etc., although even this is not uniform. It is hard work to drop bad habits!

THE PHYSICIAN'S VISITING LIST FOR 1893. Philadelphia: P. Blakiston, Son & Co.

TOGETHER with other indications the busy physician is warned of the beginning of another year by the fact that his visiting list has almost become filled, and the close of the year brings with it the usual output of this indispensable article. Lindsay & Blakiston's appears for the forty-second time, and it can be truly said that the current issue fully maintains the reputation established by its predecessors. A special feature of this edition is the presentation of the doses of official and unofficial drugs in both the apothecaries' and the metric systems.

CORRESPONDENCE.

NEW YORK.

To the Editor of THE MEDICAL NEWS,

SIR: In thinking over the recent events of medical interest in this city, it occurred to me that a short account of the meeting of the New York State Medical Association might prove acceptable to your readers.

The President, Dr. Judson B. Andrews, of Buffalo, took for the subject of his address, "The Alienist and the General Practitioner." He dwelt particularly on the importance of prophylactic treatment, which, although the special province of the general practitioner, was often overlooked. This consists in keeping up the nutrition of children, supplying plenty of fresh air and exercise, withholding stimulating and nitrogenous food during the development of the sexual apparatus, and training them to be orderly and systematic at all times. If, in addition to this, the family physician would exert his influence to prevent ill-assorted marriages, he would be doing a noble work for the cause of humanity.

In discussing Dr. Manley's paper on "Injuries about the Ankle," Dr. E. M. Moore, of Monroe County, said that he had never had ankylosis in his cases of Pott's fracture. His treatment consisted in applying Dupuytren's splint, and in addition, securing relaxation of the tendo Achillis, by using an inclined plane, the foot being fastened to the foot-board, and turned a little on itself.

A very practical paper on "Appendicitis" was read by Dr. Nathan Jacobson, of Onondaga County. He believed that eighty or ninety per cent. of all cases represented a simple catarrhal inflammation, and therefore were amenable to medicinal treatment; and that when the symptoms were of moderate severity, and showed no tendency to increase after thirty-six hours, it was safe to consider that they are of this mild type. The administration of salines or other purgatives in the early stage is likely to prevent the formation of protective adhesions, and even cause perforation. If the symptoms are violent and progressive, operative interference is justifiable, and the first signs of general peritonitis make immediate operation absolutely imperative. When the inflammation is not very severe, and there is a tumor present, the incision should be made along the outer border of the iliac fossa, so as to be entirely extra-peritoneal; but when there are symptoms of perforation or gangrene, and no evidence of protective adhesions, the incision should be made along the outer border of the rectus muscle, directly into the general peritoneal cavity. He also advised that when there are repeated attacks, especially if associated with localized tenderness, the appendix should be removed during an intermission. In deciding the difficult question of when to operate, Dr. Moore said he was largely governed by the presence of dulness on percussion.

In cases of carcinoma of the uterus which had gone beyond the stage of operation, Dr. Janvrin said that he had been able to prolong life, and make these unfortunates reasonably comfortable by first using the sharp curette very vigorously, and then following this by applications or a fifty per cent. solution of zinc chloride. The chief point in the treatment is to stop all oozing after the curetting, and to keep the surface as dry as possible.

The subject of the treatment of puerperal eclampsia received attention at the hands of Dr. Douglas Ayres, of Montgomery Co., who, as a result of many years of active obstetric practice, had come to the conclusion that bold, but judicious venesection was the most important feature in the treatment of this terrible complication, and that when it was desirable to continuously employ a sedative for a number of hours, chloral hydrate is safer than chloroform, and more efficient.

Another contribution on obstetrics was by Dr. T. J. McGillicuddy, of New York, who advocated the performance of *pelvic* version in cases in which podalic version is commonly employed. In cases of transverse presentation it is much simpler, it necessitates the introduction of the fingers only into the uterus, and only a comparatively slight change of position of the fetus. For these reasons, there is less danger of shock and of rupture of the uterus, and the operation can be done when the uterus is retracted on the child's body, a condition in which podalic version is usually impossible.

Turning now to a little different class of subjects, we find that Dr. Alvin A. Hubbell, of Buffalo, contributed a short practical paper on "The Extraction of Steel from the Interior of the Eye by the Electro-Magnet." In his magnet, the "extension points" are placed as close to the coil around the core as possible, and to increase the surface of "the point," and consequently its power of attraction, it is flattened at the end, and for a short distance laterally. The safest and most accessible part of the eyeball through which the magnet can be introduced, is the sclera, just in front of the equator of the ball, and usually on the outer side.

The scientific work of the first day, which occupied three sessions, was concluded by a paper by Dr. Reginald H. Sayre, on "The Treatment of Neglected Cases of Rotary Lateral Curvature of the Spine." Dr. Sayre said that in examining for lateral curvature the child should be placed with its back toward the examiner, and while the knees are held straight, it should try to bend forward and touch the ground with its fingers. Slight degrees of rotation are thus made evident, which would otherwise escape detection. Among the earliest evidences of this condition is the inequality which almost exists in the distance from the umbilicus to the two nipples. After the normal curves of the spinal column have once been disturbed, the superincumbent weight of the body becomes a very important etiologic factor in increasing the deformity. It is very surprising to what an extent these spines will stretch when the patient is partially suspended. The improved position thus gained is best maintained by the application of a plaster-of-Paris jacket while the patient is suspended, and twisted as far as possible into the correct position. In one case in which there were cardiac murmurs and dyspnea on slight exertion, it was noted that during the suspension the pulse would drop from eighteen to twenty-eight beats per minute, and that the heart-action was very much less rapid after the application of the jacket than before. The great objection to sodium silicate and leather jackets is that they are impermeable, and hence act as poultices, and this objection applies also to plaster-of-Paris corsets which have been coated with shellac. This impermeability was prettily demonstrated on two plaster models, one of which had been coated with shellac. When smoke was blown into the interior of the unvarnished one, it readily escaped through the plaster on all sides, but this did not occur in the one which had been varnished.

On the morning of the second day of the meeting, Dr. Edward Cowles, of Somerville, Mass., read a metaphysical paper on "The Mental Symptoms of Fatigue." Dr. George M. Gould, of Philadelphia, being called upon to open the discussion, referred particularly to the effect of eye-strain in causing abnormal cerebral action. He could recall cases in which he considered that it had even produced disorders of the stomach, and anemia. Dr. James W. Putnam, of Buffalo, said he had frequently seen patients become neurasthenic simply as a result of a too "humdrum" life. Dr. H. S. Williams, of New York, thought it would not be difficult for anyone to convince himself of the fallacy of the doctrine that when wearied in body one could "rest" by occupying the mind.

Dr. Williams then read a paper on "Maternal Impressions," in which he endeavored to show that the theory of maternal impressions is not in harmony with known biologic laws; for these teach us that in the mother the law of self-preservation yields to the law of race-preservation, and that all her instincts are made subservient to this.

Your readers are already familiar with the admirable paper on "Brain-Surgery" by Dr. Roswell Park, of Buffalo, so that I need only add that in the discussion of his paper, Dr. Putnam stated that many cases of epilepsy had proved more amenable to treatment with the bromides, after operation, than they were before; and that the President called attention to the great importance of the dietetic treatment of this class of cases.

Some interesting remarks were made by Dr. Benjamin M. Ricketts, of Cincinnati, in connection with his demonstration of the new method of performing intestinal anastomosis devised by Dr. J. P. Murphy, of Chicago. A metal "button" similar in construction to the now popular glove-fastening, consisting of a plug fitting into a socket, is the essential feature. This "button" is made with a central opening. The intestine is simply puckered around each half of this button by means of a thread, and then the two parts are joined together. The button eventually sloughs away, and escapes through the bowel. The operation can be performed in a very few minutes.

In the evening, Dr. Frederic S. Dennis, of New York, read a carefully prepared address on "The Achievements of American Surgery;" and Dr. Henry D. Didama, of Onondago County, prepared the way for the social event of the evening, by reading a chatty little paper containing many practical suggestions. He believed thoroughly in early and complete withdrawal by aspiration of the fluid in pleurisy, claiming that this not only hastened recovery from the acute attack, but prevented most of the usual unpleasant sequelæ. He reminded those who desired to prescribe saline waters, that a saline solution which is so diluted that its specific gravity is less than that of the serum of the blood, passes off largely by the kidneys, instead of acting as a laxative. Those who are wont to extol the virtues of this or that lithia water, and are tempted to violate at least the spirit

of the code of ethics by writing testimonials for the proprietors of these waters to circulate broadcast, would do well to bear in mind the author's statement, that no salt of lithium is equal in its solvent power over uric acid, to the same quantity of potassium citrate. Under the title of "coughing down-hill," we find this writer describing a method of diminishing the severity of the cough in cases of bronchiectasis. It consists in having the patient lie on a bed or lounge, with one hand on the floor and the head almost reaching there. The dilated bronchus or "pocket" is thus inverted, and the accumulated fluid runs out of it, as water is poured out of a pitcher. If this is done four or five times a day, so as to anticipate the filling of these pockets, the patient will obtain marked relief. Dr. Didama says he got this idea from a pamphlet published nearly fifty years ago by the poet, N. P. Willis, who thought he had cured himself of pulmonary tuberculosis by this original method of treatment.

The third day was opened by the reading of a paper by Dr. Frank S. Parsons, of Northampton, Mass., on "Acute Pleurisy." He considered acute pleurisy to be probably due to microbes, and called attention to the fact that secondary pleurisies occur most commonly as complications of other diseases of microbic origin. In the treatment, he had found diuretics the most useful, and purgatives not only unreliable, but sometimes positively dangerous. He suggested that by means of electro-puncture, one could call in the aid of electrolysis to promote the absoption of pleuritic effusions.

The etiology of gastric ulcer was considered in a paper by Dr. Charles G. Stockton, of Buffalo. He suggested that by some process analogous to herpes or to idiopathic hematoma auris, we might readily explain most of the clinical features of this condition.

Dr. Zera J. Lusk, of Wyoming County, read a paper in which he took the ground that when mitral stenosis is present in pregnancy the only safe treatment before the fifth month is the induction of abortion. In discussing this paper, Dr. S. T. Armstrong, of New York, said that he had had under observation for ten years or more a lady who had mitral stenosis before her first pregnancy, and although she had been pregnant five times, she is in good general health, and her last child is a healthy boy.

"The Use of Electricity in Midwifery" was the subject of a paper by Dr. Ogden C. Ludlow, of New York. He considered electricity chiefly of service in midwifery for three purposes, viz.: to produce a sedative action, to facilitate the progress of labor, and to prevent and control uterine hemorrhage. While it calms the general nervous irritability and lessens suffering, it does not, like chloroform and morphine, interfere with the progress of labor, but on the contrary, increases the strength and efficiency of the uterine contractions. Ergot is slow and uncertain; faradization produces its effect instantaneously, and is entirely under control; ergot produces a tonic cramp of the uterine muscle, while the faradic current, properly applied, causes a steady, rhythmic contraction, which closely imitates Nature's method. The current is best applied with the positive pole over the sacro-lumbar region, and the negative on the abdomen, and in order to produce sedation the interruptions of the current should be very rapid and smooth.

Those who have followed the trend of medical thought are prepared to believe that microbes are as omnipresent as the reporters of our enterprising daily newspapers, and, therefore, they will not expect me to describe in detail the long paper of Dr. Nelson B. Sizer, of Kings County, on "The Rôle of Microbes in Disease." He has taken the trouble to make some mathematical calculations illustrating the wonderful powers of reproduction of microbes, and has found that the progeny from a bacillus of average health and vigor would be sufficient at the end of five days to fill a space equal to that occupied by all the oceans on the surface of this earth. It must have been the contemplation of some such awful problem as this which furnished the inspiration to Malthus, which resulted in his well-known theory of population. Without affirming or denying the truth of that theory when applied to human beings, it must be evident that in a disease like anthrax, in which the microbes feed on oxygen, their rapid multiplication must abstract from the blood more oxygen than can be supplied by the lungs, and as a result, dyspnea and cyanosis are developed. It is reassuring to read that the tubercle-bacillus is very easily killed by a bright light, and this observation at once becomes interesting, when the author endeavors to explain on this principle the fact that the occupants of the best-lighted rooms in prisons are much less frequently attacked by tuberculosis than those living in darker quarters; but attractive as is this theory, it seems hardly adequate to explain, as Dr. Sizer would have it do, the fact that many cases of tuberculous peritonitis recover after a simple exploratory celiotomy.

This is a general idea of the very creditable work of the New York State Medical Association at their ninth annual meeting. At the close of the third afternoon session, the new President, Dr. S. B. W. McLeod, of New York, was escorted to the chair. O. C. L.

NEWS ITEMS.

Society Meeting.—College of Physicians, January 4, 1893, at 8 P.M.

Prize for an Essay upon Epilepsy.—The Belgian Academy of Medicine has offered a prize of 4000 francs ($800) for the best essay upon the pathology and treatment of epilepsy. Papers in competition must be presented before February 1, 1894.

Dr. William P. Northrup has been invited by the Trustees of the New York Pathological Society to deliver the Middleton-Goldsmith lecture before the Society in April next; the subject to be announced later.

linical Reports and Lectures by Dr. S. Weir Mitchell.—THE MEDICAL NEWS congratulates its readers on having secured the exclusive right to publish during the coming year a number of clinical lectures and reports by this distinguished teacher and author. The reports, chiefly of the clinics at the Infirmary for Nervous Diseases of the Orthopedic Hospital, will be made by Dr. C. W. Burr, who is Dr. Mitchell's assistant, a fact that would lend them an added scientific value, if such were needed. Each will be personally revised and annotated by Dr. Mitchell, and they will appear in THE NEWS at intervals of about one month, beginning early in January.

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MEDICAL NEWS.

A WEEKLY MEDICAL JOURNAL.

Vol. LXI. No. 27. Whole No. 1042. SATURDAY, DECEMBER 31, 1892. Per Annum, $4.00. Per Copy, 10 Cents.

Contents.

Entered at the Post Office at Philadelphia as Second-Class Matter.

MEDICINAL PYROZONE.

Geromorphism.

THIS name is applied to a preparation of peroxide of hydrogen containing three per cent. of H_2O_2 combined in such a way as to render the solution stable, and, with very ordinary precautions, the last portions of a bottle will be of fully the same strength as the first. This quality, which is unusual in solutions of peroxide of hydrogen, is due to the care exercised in the manufacture of the Medicinal Pyrozone, and is of great importance, as a preparation which is growing weaker daily, is not only a great inconvenience, but a positive danger. The Medicinal Pyrozone, when not in use, should be kept from contact with organic matter.

Peroxide of hydrogen was discovered and described in the year 1818 by the illustrious French chemist, Baron THENARD. B. W. RICHARDSON, M. D. (*Asclepiad*), says: "In 1860 I made my first report to the Medical Society of London, and, in 1862, I made a second report on the medicinal use of the peroxide. I had by this time used it in two hundred and twenty-three cases of disease, including phthisis, diabetes, anæmia, sub-acute and chronic rheumatism, strumous enlargement of the cervical glands, mesenteric disease, pertussis, chronic bronchitis, chronic laryngitis, mitral disease, and dyspepsia. In epitome of results I drew the conclusions: That in diabetes the peroxide reduced the specific gravity of the urine, whilst it rather increased the quantity; that in chronic and sub-acute rheumatism it afforded relief; that in valvular disease of the heart with pulmonary congestion it gave relief to the dyspnœa; that in mesenteric disease and in jaundice it caused an improvement in the digestion; that in pertussis its effect for good was very remarkable, since it cut short the paroxysms of cough, and seemed decidedly to shorten the period of the disease; that in chronic bronchitis it lessened the dyspnœa, and rendered the expectorated matter less tenacious; that in chronic laryngitis it gave pain on being swallowed, and did not appear to be useful; that in anæmia it did not of itself render any service, but favored the good effect of iron; that in the first stage of phthisis it caused improvement in the digestion, and in the later stages gave unquestionable and even wonderful relief to the breathlessness and oppression, acting, in fact, like an opiate without narcotism, and assisting oxidation.

In the discussion which followed upon the reading of this paper I was warmly supported in several points by Drs. GIBBON, SYMES, THOMPSON, and GIBB, all of whom had been prescribing the peroxide on the suggestion made in my previous paper of 1860. Dr. GIBB bore special testimony to its value in affording relief during the last stage of phthisis, for which I had recommended it in the case of a member of his own family. But the most important new observation I had to communicate to the Society in 1862 was that in free and frequently repeated doses the peroxide could be made to produce a modified salivation, a fact which led to two suggestions: firstly, that in the use of mercurial and iodide preparations it was the chlorine or iodine in them which caused the ptyalism; secondly, that the peroxide would be a good substitute for mercury and the iodides in the treatment of syphilis.

To an animal deep under chloroform I introduced the peroxide solution, directly, by injecting it through a fine needle into the lung structure itself, puncturing through an intercostal space. This caused an oxygen diffusion into the lung, during which the animal lived, in one instance for five minutes, with the respiration entirely cut off.

In an experiment on the muscles of an animal under chloroform I repeated what I had already done for removing muscular rigidity, but in a different way. Ammonia injected into a living muscle excites contraction tetanic in character. When this had been produced, the peroxide solution, warmed to the temperature of 100° Fahr., was injected slowly, with the effect of producing relaxation. In a further trial, the muscles of a narcotized animal were brought into contraction by a Faradic current, and in this state the muscles were injected with the solution at blood temperatures, with the effect of overcoming the resistance produced by the current, and of relaxing the muscles until the tension was increased.

Purulent matter possesses strongly the power of liberating oxygen from the peroxide, and probably the white corpuscles of the blood do the same. It may also be that the minute organisms called bacteria have the like power. In all cases the starting of the process is one of infinite subdivision of particular kinds of matter having a common property, and we may expect that in due time the common mode of their actions as reducers of such compound bodies as peroxide of hydrogen, will be discovered. This is one of the most important problems for solution in the whole range of medical science and art, because every condition of disease in its acute form, involving organic change of structure, depends primarily on the decomposition of oxides of the tissues.

In testing the action of the peroxide on natural organic structures which liberate oxygen from it, I observed, as related above, that the fluid oxygen causes, in some instances, decomposition of the organic matter. The same fact was observed with abnormal organic material like pus. When pus is placed for observation under the microscope, mixed with the neutral peroxide solution, the phenomena are most interesting. The pus corpuscles are, for a time, driven about as if they were alive. They move in all directions, assume ovoid shapes as they squeeze through masses that may obstruct their course, and after many variations of form and movement come to a standstill, like amorphous matter, dead, so to speak, and entirely disorganized. This effect of the peroxide in destroying pus cells led me very early in these researches to use the solution for the treatment of suppurating surfaces, and with great success."

Many other observers have testified to the value of this remarkable substance, not only as a disinfectant in the treatment of wounds, etc., but as a curative agent in a great number of infectious diseases.

DR. THOMAS S. K. MORTON, in an article on the "Treatment of Leg Ulcers," N. Y. *Med. Journal*, page 26, July 2, 1892, says: "Next, the ulcerated surfaces are subjected to the powerful but harmless antiseptic action of a spray of full strength (15 volume) peroxide of hydrogen solution. Pouring on of the agent is almost as efficient, but very wasteful. If the spray is employed, however, it is essential to use an atomizer of which every part is made of hard rubber, as the powerful oxidizing qualities of the solution will almost immediately destroy any metallic parts with which it may come in contact. The ulcer, having been thus sprayed until active effervescence ceases, is then gently washed off by a stream of simple water, or by a pledget or mop of absorbent cotton saturated with the same. This carries away all detritus loosened up by the action of the peroxide."

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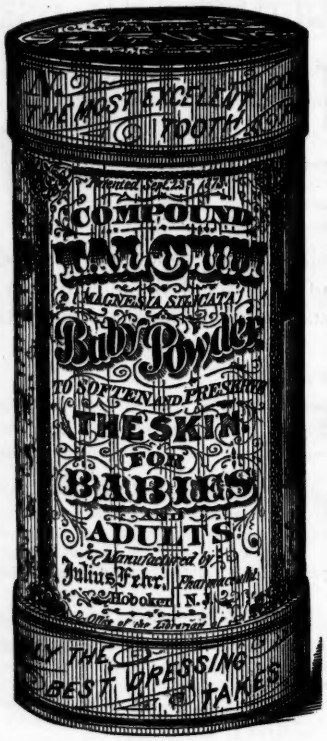
Pure peroxide of hydrogen is a liquid of a higher specific gravity than that of water; consequently, the common term "15 volume solution" is very misleading; and, as a fact, we find that analyses of these solutions show that, instead of the three per cent. of the peroxide which they should contain, they seldom show more than two per cent.; and very frequently but one and one-half per cent., or but one-half of the proper quantity.

Medicinal Pyrozone always contains three per cent. of the pure peroxide of hydrogen by weight, and can be relied upon in all cases as being of this strength.



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In Re O. C. PEROXIDE OF HYDROGEN.

(From the *Medical News*, Philadelphia, April 9th, 1892.)

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In the following examination care was taken to secure fresh samples, and they were all in the original, unbroken packages when delivered to us. The proportion of hydrogen dioxide is expressed, as is customary, in volumes of oxygen, determined by the standard method with potassium permanganate:

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Bene	11.8	"	"	3.36
Lehn & Fink	10.5	"	"	4.08
Marchand (1st sample)	10.1	"	Present	34.08
" (2d sample)	Not determined.	"	"	22.00
Powers & Weightman	9.02	"	"	23.04
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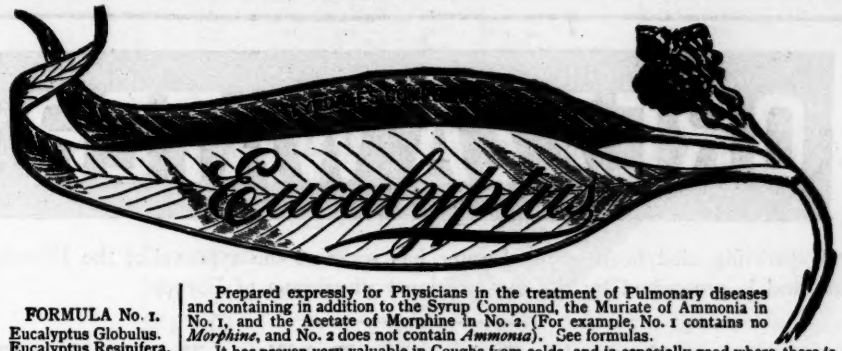

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